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ENVIRON

170060

03
3/16/00

March 16, 2000

Mr. Michael McAteer
USEPA, HSRW-6J
77 West Jackson Blvd.
Chicago, IL 60604-3590

Re: Fourth Quarter 1999 Surface and Subsurface Water Monitoring Report
ECC Site
Zionsville, Indiana

Dear Mr. McAteer:

This report summarizes the monitoring of the till wells, the sand/gravel wells, and the surface water of the Unnamed Ditch at the ECC Site in Zionsville, Indiana during the fourth quarter of 1999.

The specific tasks completed during the fourth quarter of 1999 included:

- Collection of water level measurements from 15 monitoring wells and one piezometer on November 9, 1999;
- Sampling of the 6 off-site till monitoring wells and the 5 off-site sand/gravel monitoring wells, including ECC MW-13, during the week of November 9, 1999;
- Sampling of 3 of the 4 on-site till monitoring wells¹ during the week of November 9, 1999;
- Analysis of all the subsurface water samples collected for parameters specified in the Revised Remedial Action, Exhibit A, Revision 2, dated May 7, 1997 (Revised Exhibit A);

No surface water measurements or samples were collected due to lack of water within the Unnamed Ditch.

The following section provides a brief description of the fourth quarter sampling activities. The fourth quarter water level measurements, analytical results for the subsurface water samples, and the field measurements and purge data area summarized in the attached tables.

¹ Till monitoring well T-2 was not sampled during this event due to the presence of product found on previous sampling events.

A. Subsurface Water Flow Determination

1. Data Collection

On November 9, 1999, the depth to water was measured at the four on-site till monitoring wells, the six off-site till monitoring wells, the four off-site sand/gravel monitoring wells, monitoring well MW-13, and the piezometer P-1 using an electronic water level meter. The till and sand/gravel monitoring well locations are shown on Figure 1. Measurements were recorded to the nearest 0.01 foot. The depth to water measurements and the corresponding water elevation data derived from these measurements are presented in Table 1.

2. Subsurface Water Elevation Data

The subsurface water elevations and contours for the sand/gravel unit at the site for the fourth quarter are presented on Figure 2.

B. On-Site and Off-Site Subsurface Water Sampling

As part of the semi-annual sampling of the on-site monitoring wells, four subsurface water samples are to be collected from the four on-site till monitoring wells on a biannual basis. These samples are collected during the second and fourth quarterly sampling events. During this sampling event, three of the four on-site monitoring wells were sampled. Till monitoring well T-2 was not sampled during this event due to the presence of product found in the well during a previous sampling event. The on-site subsurface water sample results are summarized in Table 2.

As part of the fourth quarter sampling of the off-site monitoring wells, 13 subsurface water samples (including duplicates) were collected from the off-site monitoring wells (T-5 through T-10, S-1 through S-4A, and ECC MW13) on November 9 through 15, 1999. Due to a laboratory error, the volatile organic compounds (VOC) samples from two till monitoring wells (T-8 and T-10) had to be recollected. As a result the T-8 and T-10 monitoring wells were re-purged and sampled on December 2, 1999 for VOCs. The off-site subsurface water sample results are summarized in Table 3 and Table 4.

All samples were collected as described in Section 6.3 of the Radian, Revised Remedial Action Field Sampling Plan, Revision 4, dated April 28, 1998 (FSP). In accordance with the FSP, the wells were purged a minimum of three well volumes or until the wells went dry, prior to sampling. The water in the till monitoring wells was evacuated using dedicated polyethylene disposable bailers and sampled using dedicated Teflon disposable bailers. Due to the poor recovery of some of the till monitoring wells (i.e., T-5 and T-8), the samples from these wells were collected over a period of 1 to 6 days. For all the till wells, the VOC and hexavalent chromium samples were collected as soon as possible on the day of purging. The water in the sand/gravel monitoring wells was purged and sampled using a peristaltic pump and dedicated polyethylene tubing. The intake for the polyethylene tubing was placed at the bottom of the screened interval.

The metals and polychlorinated biphenyls (PCBs) samples were filtered using a 0.45-micron filter in accordance with Section 6.3 of the FSP. Field measurements of pH, temperature, specific conductivity, and dissolved oxygen were collected before and after the purging

procedure. Field indicator parameters and other information recorded during well purging and sampling are provided in Tables A-1 through A-3 of Appendix A.

Elevated pH values were measured during the purging and sampling of monitoring well T-7 (pH 9.37-11.96). These elevated pH levels appear to be the result of concrete grout, used to install the outer protective casing, in contact with the T-7 well screen. To rectify this problem ENVIRON proposes the installation of a new till monitoring well to replace T-7. In addition, elevated concentrations of VOCs were detected within monitoring well S-4A. ENVIRON believes that the integrity of this well may have been compromised during past construction activities in this area.

C. Surface Water Sampling

Due to a lack of water throughout the entire length of the Unnamed Ditch, no surface water samples or field measurements were collected from any of the three surface water locations (SW-1, SW-2 and NSL-1) during the fourth quarter 1999 sampling event.

D. Sample Analysis and Results

Following sample collection, the samples were placed in an ice-filled cooler and were shipped via overnight courier to CompuChem Laboratories of Cary, North Carolina, for analysis. Appropriate chain-of-custody protocols were followed throughout sample handling.

Subsurface water samples were analyzed for the parameters listed in Table 3-1 of Revised Exhibit A in accordance with the analytical methods summarized in Table 7-1 of the FSP. Analytical results for the subsurface and the quality assurance and quality control samples for this sampling event are summarized in Table 2 through Table 5.

E. Quality Assurance and Quality Control Procedures

To monitor the effectiveness of decontamination procedures, ENVIRON collected field blanks by pouring deionized water through a decontaminated Teflon bailer into a sample container or by pumping deionized water through the peristaltic pump and tubing into a sample container. For the metals and PCB samples, the field blank water was also passed through a 0.45 micron filter. A total of two field blanks were collected and analyzed this quarter. Three trip blanks were submitted to the laboratory to monitor for possible contamination from sample handling, transport, and storage. The trip blanks accompanied the samples and were analyzed for the VOCs listed in Table 3-1 of Revised Exhibit A. The trip and field blank sample results were compared to the most stringent of the Acceptable Stream Concentrations and the Acceptable Subsurface Water Concentrations for each analyte. The trip and field blank sample results are presented in Table 5.

Acetone, a common laboratory contaminant, was detected at low concentrations in one trip blank and one field blank. The other field blank and the other two trip blanks were not analyzed for acetone. Due to a chain of custody error, one of the field blanks and two of the trip blanks were analyzed for the Acceptable Stream Parameters rather than the longer list of Acceptable Subsurface Water Parameters. Low concentrations of methylene chloride were also detected within all the trip and field blanks. ENVIRON believes that the methylene chloride

and acetone detections within the trip blanks and field blanks are the result of laboratory contamination. ENVIRON is continuing to work with the laboratory to rectify this problem.

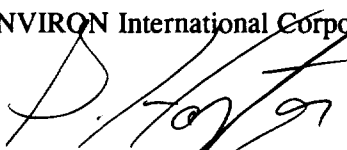
In addition to methylene chloride and acetone, low concentrations of toluene and methyl ethyl ketone were each detected within a trip blank and a field blank. ENVIRON has not located the source of these analytes to the trip and field blanks. Also, low concentrations (below their respective contract required detection limit) of antimony, barium, beryllium, manganese, nickel, silver, and vanadium were detected within the field blanks. A low concentration of bis(2-ethylhexyl)phthalate was detected within a laboratory blank.

To evaluate the reproducibility of results, ENVIRON collected one duplicate subsurface water sample from sand/gravel monitoring well S-2 and sand/gravel monitoring well S-3. The duplicate samples were collected by pumping the subsurface water into two sets of sample containers. The results of the duplicate samples are presented in Table 4. The results for the duplicate pairs were similar, indicating good reproducibility of the sampling and analytical methods. In addition to the duplicate samples, ENVIRON collected extra sample volume from 5 percent of the monitoring wells for the laboratories matrix spike and matrix spike duplicate (MS/MSD) samples.

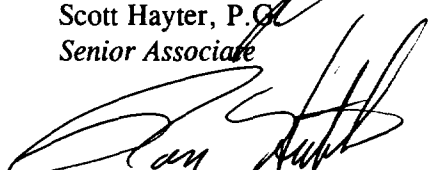
If you have any questions about this letter or any other aspects of the project, please do not hesitate to contact us.

Sincerely,

ENVIRON International Corporation



Scott Hayter, P.C.
Senior Associate



Ronald E. Hutchens, P.E.
Principal

cc: Mr. Myron Waters - IDEM
Mr. Tim Harrison - CH2M Hill
Mr. Roy Ball - ENVIRON International Corporation
Mr. Norman Bernstein - N. W. Bernstein & Associates, L.L.C.
Mr. George Anastos - Versar, Inc.

Tables

TABLE 1
Subsurface Water Elevations - November 9, 1999
ECC Compliance Monitoring Wells
Fourth Quarter 1999

Well Number	Rim of PVC Elevation (feet AMSL)	Depth-to-Water (feet)	Water Elevation (feet AMSL)
T-1	897.41	19.25	878.16
T-2	898.67	19.56	879.11
T-3	896.07	15.90	880.17
T-4A	895.37	12.43	882.94
T-5	889.08	10.54	878.54
T-6	891.76	13.98	877.78
T-7	891.02	12.99	878.03
T-8	888.88	10.45	878.43
T-9	882.08	3.71	878.37
T-10	889.42	9.16	880.26
S-1	890.27	12.02	878.25
S-2	888.46	10.44	878.02
S-3	882.45	5.06	877.39
S-4A	889.59	11.68	877.91
P-1	889.66	11.66	878.00
ECC MW-13	883.30	11.47	871.83

Notes:

AMSL - Above Mean Sea Level.

PVC - Polyvinyl Chloride Inner Well Casing

TABLE 2 (Page 1 of 2)
Summary of Analytical Results for Subsurface Water Samples
ECC On-Site Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		T-1 ECTGW1-05 BAILER 11/9/99	T-2 ECTGW2-05 BAILER 11/9/99	T-3 ECTGW3-05 BAILER 11/9/99	T-4A ECTGW4-05 BAILER 11/9/99
Volatile Organics					
Acetone	[3,500]	1.0 J	NS	22 B	3.0 B
1,1-Dichloroethene	[7]	0.5 U	NS	4.0	0.5 U
1,2-Dichloroethene(total)	[70]	0.8	NS	6,400 D	0.5 U
Ethylbenzene	[680]	0.5 U	NS	2.0	0.5 U
Methylene Chloride	[4.7]	0.8	NS	6.0	0.5
Methyl ethyl ketone	[170]	1.0 J	NS	2.0 U	0.7 J
Methyl isobutyl ketone	[1,750]	2.0 U	NS	99	2.0 U
Tetrachloroethene	[0.69]	0.6	NS	21	2.0
Toluene	[2,000]	0.3 J	NS	90 DJ	0.4 J
1,1,1-Trichloroethane	[200]	0.5 U	NS	59 DJ	1.0
1,1,2-Trichloroethane	[0.61]	0.5 U	NS	3.0	0.5 U
Trichloroethene	[5]	0.4 J	NS	49 DJ	2.0
Vinyl chloride	[2]	0.5 U	NS	470 D	0.5 U
Xylenes (total)	[10,000]	0.5 U	NS	46	0.5 U
Semi-Volatile Organics					
Bis(2-ethylhexyl)phthalate	[2.5]	4.0 J	NS	32	13
Di-n-butylphthalate	[3,500]	9.0 U	NS	1.0 J	10 U
1,2-Dichlorobenzene	[600]	9.0 U	NS	24	10 U
Diethyl phthalate	[28,000]	9.0 U	NS	11 U	10 U
Isophrone	[8.5]	9.0 U	NS	11 U	10 U
Naphthalene	[14,000]	9.0 U	NS	6.0 J	10 U
Phenol	[1,400]	9.0 U	NS	1.0 J	10 U

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Subsurface Water Concentrations as presented in Revised Exhibit A, Table 3-1.

[2] = Acceptable Subsurface Water Concentration

J = Estimated Value.

U = Compound not detected above adjacent method detection limit.

B = Analyte was also detected in the blank.

D = Compound quantitated on a diluted sample.

NS = Not Sampled.

TABLE 2 (Page 2 of 2)
Summary of Analytical Results for Subsurface Water Samples
ECC On-Site Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		T-1 ECTGW1-05 BAILER 11/9/99	T-2 ECTGW2-05 BAILER 11/9/99	T-3 ECTGW3-05 BAILER 11/9/99	T-4A ECTGW4-05 BAILER 11/9/99
Polychlorinated biphenyls					
Aroclor-1016	[1.0]	0.5 U	NS	0.49 U	0.54 U
Aroclor-1221	[2.0]	1.0 U	NS	0.98 U	1.1 U
Aroclor-1232	[1.0]	0.5 U	NS	0.49 U	0.54 U
Aroclor-1242	[1.0]	0.5 U	NS	0.49 U	0.54 U
Aroclor-1248	[1.0]	0.5 U	NS	0.49 U	0.54 U
Aroclor-1254	[1.0]	0.5 U	NS	0.49 U	0.54 U
Aroclor-1260	[1.0]	0.5 U	NS	0.49 U	0.54 U
Inorganics					
Antimony	[14]	NA	NS	2.2 B	1.8 U
Arsenic	[50]	7.6 U	NS	8.8 B	7.6 U
Barium	[1,000]	NA	NS	263	67.1
Beryllium	[4]	NA	NS	0.29 B	0.39 B
Cadmium	[10]	0.30 U	NS	0.31 B	0.30 U
Chromium VI	[50]	10.0 U	NS	10.0 U	10.0 U
Lead	[50]	1.5 U	NS	1.5 U	1.5 U
Manganese	[7,000]	NA	NS	167	289
Nickel	[150]	1.1 U	NS	53.1	5.3
Silver	[50]	NA	NS	0.90 U	0.90 U
Tin	[21,000]	NA	NS	3.6 U	3.6 U
Vanadium	[245]	NA	NS	0.80 U	0.80 U
Zinc	[7,000]	3.1 U	NS	3.1 U	3.1 U
Cyanide	[154]	8.2 U	NS	21.1	8.2 U

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Subsurface Water Concentrations as presented in Revised Exhibit A, Table 3-1.

USEPA Contract Laboratory Program method detection limits for PCBs and arsenic were used in place of the Acceptable Subsurface Water Concentrations for these analytes since the detection limits are above their respective Acceptable Subsurface Water Concentrations.

[2] = Acceptable Subsurface Water Concentration

U = Compound not detected above adjacent method detection limit.

B = Analyte value is < contract required detection limit but > = instrument detection limit.

NS = Not Sampled.

NA = Not Analyzed due to a chain of custody error.

TABLE 3 (Page 1 of 3)
Analytical Results for Subsurface Water Samples
ECC Off-Site Till Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		T-5 ECTGW5-05 BAILER 11/9/99	T-6 ECTGW6-05 BAILER 11/9/99	T-7 ECTGW7-05 BAILER 11/9/99	T-8 ECTGW8-05 BAILER 12/2/99*	T-9 ECTGW9-05 BAILER 11/10/99	T-10 ECTGW10-05 BAILER 12/2/99*
Volatile Organics							
1,1-Dichloroethene	[1.85]	0.5 U	37	0.5 U	0.5 U	0.5 U	0.4 J
1,2-Dichloroethene (total)	[1.85]	0.5 U	11,750 D	64 D	3.0	0.8	419 D
Ethylbenzene	[3,280]	0.5 U	140	2.0	0.5 U	0.5 U	0.5 U
Methylene Chloride	[15.7]	0.9	97	0.6	2.0	0.5 U	0.3 J
Tetrachloroethene	[8.85]	0.5 U	4.0 J	3.0	0.5 J	0.5 U	0.5 U
Toluene	[3,400]	0.5 U	620 D	18	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	[5,280]	0.5 U	25 U	0.5 U	0.5 U	0.5 U	19
1,1,2-Trichloroethane	[41.8]	0.5 U	25 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	[80.7]	0.5 U	8.0 J	12	0.9	0.5 U	2.0
Vinyl chloride	[525]	0.5 U	1,200 D	2.0	0.3 J	34 D	0.5 U

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Stream Concentrations as presented in Revised Exhibit A, Table 3-1.

[15.7] - Acceptable Stream Concentration.

U - Compound not detected above adjacent method detection limit.

J - Estimated Value.

D - Compound quantitated on a diluted sample.

B - Analyte was also detected in the blank.

* - Due to a laboratory error, the VOC portion of the T-8 and T-10 samples had to be recollected on December 2, 1999.

TABLE 3 (Page 2 of 3)
Analytical Results for Subsurface Water Samples
ECC Off-Site Till Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		T-5 ECTGW5-05 BAILER 11/9/99	T-6 ECTGW6-05 BAILER 11/9/99	T-7 ECTGW7-05 BAILER 11/9/99	T-8 ECTGW8-05 BAILER 11/10/99	T-9 ECTGW9-05 BAILER 11/10/99	T-10 ECTGW10-05 BAILER 11/10/99
Semi-Volatile Organics							
Bis(2-ethylhexyl)phthalate	[50,000]	7.0 J	4.0 J	1.0 J	1.0 JB	10 U	1.0 JB
Di-n-butylphthalate	[154,000]	9.0 U	9.0 U	10 U	10 U	10 U	9.0 U
1,2-Dichlorobenzene	[763]	9.0 U	29	10 U	10 U	10 U	9.0 U
Diethylphthalate	[52,100]	9.0 U	2.0 J	10 U	10 U	10 U	9.0 U
Naphthalene	[620]	9.0 U	9.0 J	10 U	10 U	10 U	9.0 U
Phenol	[570]	9.0 U	390 D	18	10 U	10 U	9.0 U
Polychlorinated biphenyls							
Aroclor-1016	[1.0]	0.51 U	0.5 U	0.45 U	0.49 U	0.47 U	0.46 U
Aroclor-1221	[2.0]	1.0 U	1.0 U	0.91 U	0.98 U	0.94 U	0.92 U
Aroclor-1232	[1.0]	0.51 U	0.5 U	0.45 U	0.49 U	0.47 U	0.46 U
Aroclor-1242	[1.0]	0.51 U	0.5 U	0.45 U	0.49 U	0.47 U	0.46 U
Aroclor-1248	[1.0]	0.51 U	0.5 U	0.45 U	0.49 U	0.47 U	0.46 U
Aroclor-1254	[1.0]	0.51 U	0.5 U	0.45 U	0.49 U	0.47 U	0.46 U
Aroclor-1260	[1.0]	0.51 U	0.5 U	0.45 U	0.49 U	0.47 U	0.46 U

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Stream Concentrations as presented in Revised Exhibit A, Table 3-1.

USEPA Contract Laboratory Program method detection limits for PCBs were used in place of the Acceptable Stream Concentrations since the detection limits are above their respective Acceptable Stream Concentrations.

[15.7] - Acceptable Stream Concentration.

U - Compound not detected above adjacent method detection limit.

J - Estimated Value.

D - Compound quantitated on a diluted sample.

B - Analyte value is < contract required detection limit but > = instrument detection limit.

TABLE 3 (Page 3 of 3)
Analytical Results for Subsurface Water Samples
ECC Off-Site Till Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		T-5 ECTGW5-05 BAILER 11/9/99	T-6 ECTGW6-05 BAILER 11/9/99	T-7 ECTGW7-05 BAILER 11/9/99	T-8 ECTGW8-05 BAILER 11/10/99	T-9 ECTGW9-05 BAILER 11/10/99	T-10 ECTGW10-05 BAILER 11/10/99
Inorganics	Arsenic	[10]	7.6 U	43.2	7.6 U	7.6 U	7.6 U
	Chromium VI	[11]	10 U	10.0 U	10.0 U	10.0 U	10.0 U
	Lead	[10]	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
	Nickel	[100]	2.6 B	39.9	5.0	2.3 B	16.7
	Zinc	[47]	114	27.3	3.1 U	7.4 B	3.1 U
	Cyanide	[5.2]	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Stream Concentrations as presented in Revised Exhibit A, Table 3-1.

USEPA Contract Laboratory Program method detection limit for arsenic was used in place of the Acceptable Stream Concentration since the detection limit for arsenic is above its respective Acceptable Stream Concentration.

[15.7] - Acceptable Stream Concentration.

U - Compound not detected above adjacent method detection limit.

B - Analyte value is < contract required detection limit but > = instrument detection limit.

TABLE 4 (Page 1 of 3)
Analytical Results for Subsurface Water Samples
ECC Off-Site Sand/Gravel Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		S-1 ECSGW1-05 PUMP 11/11/99	S-2 ECSGW2-05 PUMP 11/10/99	S-2 ECSGW2-05D PUMP 11/10/99 Duplicate	S-3 ECSGW3-05 PUMP 11/11/99	S-3 ECSGW3-05D PUMP 11/11/99 Duplicate	S-4A ECSGW4-05 PUMP 11/11/99	MW13 ECSGWM13-05 PUMP 11/10/99
Volatile Organics								
1,1-Dichloroethene	[1.85]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	[1.85]	0.5 U	2.0	0.8	0.5 U	0.5 U	66.5 E	3.0
Ethylbenzene	[3,280]	0.5 U	0.5 U	0.5 U	0.1 J	0.5 U	0.5 U	0.2 J
Methylene Chloride	[15.7]	0.5 J	2.0	1.0	0.5 U	2.0	1.0	1.0
Tetrachloroethene	[8.85]	0.5 U	0.9	0.7	0.5 U	0.5 U	0.5 U	0.4 J
Toluene	[3,400]	0.5 U	0.3 J	0.2 J	0.5 U	0.5 U	0.5 U	0.2 J
1,1,1-Trichloroethane	[5,280]	0.5 U	0.5	0.4 J	0.5 U	0.5 U	0.5 U	0.6
1,1,2-Trichloroethane	[41.8]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	[80.7]	0.5 U	0.9	0.9	0.5 U	0.5 U	0.5 U	0.7
Vinyl chloride	[525]	0.5 U	0.8	0.7	0.5 U	0.3 J	7.0	2.0

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Stream Concentrations as presented in Revised Exhibit A, Table 3-1.

[2] = Acceptable Stream Concentration.

U = Compound not detected above adjacent method detection limit.

J = Estimated Value.

E = Exceeds the upper limit of the calibration range of the instrument for that specific analysis.

TABLE 4 (Page 2 of 3)
Analytical Results for Subsurface Water Samples
ECC Off-Site Sand/Gravel Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		S-1 ECSGW1-05 PUMP 11/11/99	S-2 ECSGW2-05 PUMP 11/10/99	S-2 ECSGW2-05D PUMP 11/10/99 Duplicate	S-3 ECSGW3-05 PUMP 11/11/99	S-3 ECSGW3-05D PUMP 11/11/99 Duplicate	S-4A ECSGW4-05 PUMP 11/11/99	MW13 ECSGWM13-05 PUMP 11/10/99
Semi-Volatile Organics								
Bis(2-ethylhexyl)phthalate	<i>[50,000]</i>	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	<i>[154,000]</i>	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	<i>[763]</i>	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	<i>[52,100]</i>	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	<i>[620]</i>	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	<i>[570]</i>	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Polychlorinated biphenyls								
Aroclor-1016	<i>[1.0]</i>	0.51 U	0.51 U	0.51 U	0.46 U	0.50 U	0.50 U	0.46 U
Aroclor-1221	<i>[2.0]</i>	1.0 U	1.0 U	1.0 U	0.92 U	1.0 U	1.0 U	0.92 U
Aroclor-1232	<i>[1.0]</i>	0.51 U	0.51 U	0.51 U	0.46 U	0.50 U	0.50 U	0.46 U
Aroclor-1242	<i>[1.0]</i>	0.51 U	0.51 U	0.51 U	0.46 U	0.50 U	0.50 U	0.46 U
Aroclor-1248	<i>[1.0]</i>	0.51 U	0.51 U	0.51 U	0.46 U	0.50 U	0.50 U	0.46 U
Aroclor-1254	<i>[1.0]</i>	0.51 U	0.51 U	0.51 U	0.46 U	0.50 U	0.50 U	0.46 U
Aroclor-1260	<i>[1.0]</i>	0.51 U	0.51 U	0.51 U	0.46 U	0.50 U	0.50 U	0.46 U

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Stream Concentrations as presented in Revised Exhibit A, Table 3-1.

USEPA Contract Laboratory Program method detection limits for PCBs were used in place of the Acceptable Stream Concentrations since the detection limits are above their respective Acceptable Stream Concentrations.

[2] = Acceptable Stream Concentration

U = Compound not detected above adjacent method detection limit.

TABLE 4 (Page 3 of 3)
Analytical Results for Subsurface Water Samples
ECC Off-Site Sand/Gravel Monitoring Wells
Fourth Quarter 1999

LOCATION ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE COMMENT		S-1 ECSGW1-05 PUMP 11/11/99	S-2 ECSGW2-05 PUMP 11/10/99	S-2 ECSGW2-05D PUMP 11/10/99 Duplicate	S-3 ECSGW3-05 PUMP 11/11/99	S-3 ECSGW3-05D PUMP 11/11/99 Duplicate	S-4A ECSGW4-05 PUMP 11/11/99	MW13 ECSGWM13-05 PUMP 11/10/99
Inorganics	Arsenic	[10]	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	23
	Chromium VI	[11]	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
	Lead	[10]	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
	Nickel	[100]	1.1 U	4.8 B	6.1 U	9.1	1.1 U	6.0
	Zinc	[47]	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
	Cyanide	[5.2]	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U

Notes:

All concentrations are in ug/L.

Concentrations in bold exceed the Acceptable Stream Concentrations as presented in Revised Exhibit A, Table 3-1.

USEPA Contract Laboratory Program method detection limit for arsenic was used in place of the Acceptable Stream Concentration since the detection limit for arsenic is above its respective Acceptable Stream Concentration.

[2] = Acceptable Stream Concentration.

U = Compound not detected above adjacent method detection limit.

B = Analyte value is < contract required detection limit but > = instrument detection limit.

TABLE 5 (Page 1 of 2)
Analytical Results for Quality Assurance / Quality Control Samples
Fourth Quarter 1999

TYPE ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE		TRIP BLANK ECTB1-05 None 11/9/99	TRIP BLANK ECTB2-05 None 11/10/99	TRIP BLANK ECTB3-05 None 11/11/99	FIELD BLANK ECSGW1-05B Perist Pump 11/11/99	FIELD BLANK ECTGW1-05-B Bailer 11/9/99
Volatile Organic Compounds						
Acetone	[3,500]	2.0 J	NA	NA	NA	4.0
1,1-Dichloroethene	[1.85]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	[1.85]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	[680]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene Chloride	[4.7]	2.0	2.0	1.0	2.0	2.0
Methyl ethyl ketone	[170]	2.0 J	NA	NA	NA	1.0 J
Methyl Isobutyl ketone	[1,750]	2.0 U	NA	NA	NA	0.3 J
Tetrachloroethene	[0.69]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	[2,000]	0.5 U	0.5 U	0.2 J	0.2 J	0.5 U
1,1,1-Trichloroethane	[200]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	[0.61]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	[5]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	[2]	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylenes (Total)	[10,000]	0.5 U	NA	NA	NA	0.5 U
Semi-Volatile Organic Compounds						
Bis (2-ethylhexyl) phthalate	[2.5]	NS	NS	NS	10 U	10 U
Di-n-butyl phthalate	[3,500]	NS	NS	NS	10 U	10 U
1,2-Dichlorobenzene	[600]	NS	NS	NS	10 U	10 U
Diethyl Phthalate	[28,000]	NS	NS	NS	10 U	10 U
Isophorone	[8.5]	NS	NS	NS	NA	NA
Naphthalene	[620]	NS	NS	NS	10 U	10 U
Phenol	[570]	NS	NS	NS	10 U	10 U

Notes: All concentrations are in ug/L.

Concentrations in bold exceed the most stringent of the Acceptable Stream Concentrations and the Subsurface Water Concentrations as presented in Revised Exhibit A, Table 3-1.

[2] = Most stringent of the Acceptable Stream Concentrations and the Acceptable Subsurface Water Concentrations.

U = Compound not detected above adjacent method detection limit.

J = Estimated Value

NA = Not Analyzed due to laboratory error.

NS = Not Sampled

TABLE 5 (Page 2 of 2)
Analytical Results for Quality Assurance / Quality Control Samples
Fourth Quarter 1999

TYPE ENVIRON SAMPLE ID COLLECTION METHOD COLLECTION DATE		TRIP BLANK ECTB1-05 None 11/9/99	TRIP BLANK ECTB2-05 None 11/10/99	TRIP BLANK ECTB3-05 None 11/11/99	FIELD BLANK ECSGW1-05B Perist. Pump 11/11/99	FIELD BLANK ECTGW1-05-B Bailer 11/9/99
Polychlorinated biphenyls						
Aroclor 1016	[1.0]	NS	NS	NS	0.5 U	0.49 U
Aroclor 1221	[2.0]	NS	NS	NS	1.0 U	0.91 U
Aroclor 1232	[1.0]	NS	NS	NS	0.5 U	0.49 U
Aroclor 1242	[1.0]	NS	NS	NS	0.5 U	0.49 U
Aroclor 1248	[1.0]	NS	NS	NS	0.5 U	0.49 U
Aroclor 1254	[1.0]	NS	NS	NS	0.5 U	0.49 U
Aroclor 1260	[1.0]	NS	NS	NS	0.5 U	0.49 U
Inorganics						
Antimony	[14]	NS	NS	NS	NA	4.4 B
Arsenic	[10]	NS	NS	NS	7.6 U	7.6 U
Barium	[1,000]	NS	NS	NS	NA	0.35 B
Beryllium	[4]	NS	NS	NS	NA	0.33 B
Cadmium	[10]	NS	NS	NS	NA	0.3 U
Chromium VI	[11]	NS	NS	NS	10 U	10 U
Lead	[10]	NS	NS	NS	1.5 U	1.5 U
Manganese	[7,000]	NS	NS	NS	NA	2.3 B
Nickel	[100]	NS	NS	NS	1.4 B	1.1 U
Silver	[50]	NS	NS	NS	NA	1.1 B
Tin	[21,000]	NS	NS	NS	NA	3.6 U
Vanadium	[245]	NS	NS	NS	NA	0.93 B
Zinc	[47]	NS	NS	NS	3.1 U	3.1 U
Cyanide (Total)	[5.2]	NS	NS	NS	8.2 U	8.2 U

Notes: All concentrations are in ug/L.

Concentrations in bold exceed the most stringent of the Acceptable Stream Concentrations and the Subsurface Water Concentrations as as presented in Revised Exhibit A, Table 3-1.

USEPA Contract Laboratory Program method detection limits for PCBs and arsenic were used in place of the Acceptable Stream and Acceptable Subsurface Water Concentrations for these analytes since the detection limits are above their respective Table 3-1 values.

[2] = Most stringent of the Acceptable Stream Concentrations and the Acceptable Subsurface Water Concentrations.







B = Analyte value is < contract required detection limit but > = instrument detection limit.

U = Compound not detected above adjacent method detection limit.

NA = Not Analyzed due to chain of custody error.




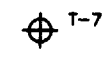
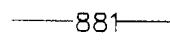
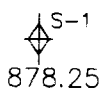
NS = Not Sampled.

Figures

-  T-5 OFFSITE TILL WELL LOCATION
 T-1 ONSITE TILL WELL LOCATION
 S-2 SAND/GRAVEL WATER-BEARING ZONE WELL LOCATION
 P-1 SAND/GRAVEL WATER-BEARING ZONE PIEZOMETER
 SW-2 SURFACE WATER SAMPLING LOCATION
 MW 13 PREVIOUSLY INSTALLED MONITORING WELL

NOTE: FOURTH QUARTER 1999 SAMPLING LOCATIONS SHOWN IN GREEN

1 SUBSURFACE AND SURFACE WATER SAMPLING LOCATIONS GURE	<div style="text-align: center;"> ENVIRON 650 DUNDEE ROAD, SUITE 150, NORTHBROOK, IL 60062 PRINCETON, NJ • ARLINGTON, VA • EMERYVILLE, CA • IRVINE, CA • NOVATO, CA HOUSTON, TX • LONDON, UK • EDINBURGH, UK </div>			
ECC SITE ZIONSVILLE, INDIANA	12/21/98 DATE	1"=30' SCALE	4th Qr Fig1 CADD FILE	11/11/99 PLOT DATE
	S. HAYTER DESIGNED BY	H. ZUCZEK DRAFTED BY	R. HUTCHENS APPROVED BY	

-  SAND/GRAVEL WATER-BEARING ZONE PIEZOMETER
-  SURFACE WATER SAMPLING LOCATION
-  PREVIOUSLY INSTALLED MONITORING WELL
-  OFFSITE TILL WELL LOCATION
-  SUBSURFACE WATER CONTOUR WITH ELEVATION (IN FEET ABOVE MSL)
-  OFFSITE SAND/GRAVEL WELL WITH SUBSURFACE WATER ELEVATION (IN FEET ABOVE MSL)

<p>2 FIGURE</p> <p>SUBSURFACE WATER ELEVATION CONTOURS IN SAND/GRAVEL ZONE 4th Quarter 1999</p>	<p>ENVIRON</p> <p>650 DUNDEE ROAD, SUITE 150, NORTHBROOK, IL 60062 PRINCETON, NJ • ARLINGTON, VA • EMERYVILLE, CA • IRVINE, CA • NOVATO, CA HOUSTON, TX • LONDON, UK • EDINBURGH, UK</p>			
<p>ECC SITE</p> <p>ZIONSVILLE, INDIANA</p>	<p>02/02/00 DATE</p>	<p>1"=30' SCALE</p>	<p>4th Qr Fig2 CADD FILE</p>	<p>02/02/00 PLOT DATE</p>
	<p>S. HAYTER DESIGNED BY</p>	<p>APR DRAFTED BY</p>	<p>R.HUTCHENS APPROVED BY</p>	

Appendix A
Field Measurements and Purge Data

TABLE A-1
FOURTH QUARTER 1999 ON-SITE TILL WELLS
FIELD MEASUREMENTS AND PURGE DATA
ECC SITE
ZIONSVILLE, INDIANA

Field Parameters and Data	T-1	T-2*	T-3	T-4A
Date	11/9/99	11/9/99	11/9/99	11/9/99
Weather Conditions	Sunny 77 F	Sunny 77 F	Sunny 77 F	Sunny 77 F
<i>Before Purging</i>				
PID Reading (ppm) 11/9/99	0	***	131	0
pH	8.32	NM	8.34	7.39
Dissolved Oxygen (ppm)	2.08	NM	1.28	3.4
Temperature (C)	15.5	NM	15.2	16.1
Specific Conductivity (uS/cm)	0.369	NM	1.58	0.97
Total Depth of Well (Ft from top of inner casing to water)	26.1	NM	27.77	24.07
Depth to water (Ft from top of inner casing to water)	19.25	19.56	15.9	12.43
Estimated water volume in well (gallons)	1.14	NM	1.93	1.90
Three Well Volumes(gallons)	3.41	NM	5.8	5.69
<i>After Purging</i>				
Purge Start	1720	NM	1214	1510
Purge End	1755	NM	1250	1525
Purge Method	BT	NM	BT	BT
Approximate Purge Rate (gpm)	0.1	NM	0.1	NM
Total Volume Purged (gal.)	3.5	NM	3.5 **	2.5 **
pH	8.13	NM	7.78	7.12
Dissolved Oxygen (ppm)	1.85	NM	3.6	4.69
Temperature (C)	14.6	NM	14.5	15.7
Specific Conductivity (uS/cm)	0.396	NM	1.5	0.97
<i>Sampling</i>				
Sampling Date(s)	11/9/99	NM	11/9/99	11/9/99
Sampling End Time	1805	NM	1420	1750
Sampling Method	BT	NM	BT	BT
Notes: NM = no measurement (Sampling not performed on particular well during this event) BT = Bailer (Teflon) PP = Peristaltic Pump PID = Photoionization Detector * No measurements or samples were taken from T-2 due to known free product in well ***PID displayed over range = above 2,000 ppm(max displayed) ** = Well purged dry				

**FIELD MEASUREMENTS AND PURGE DATA
ECC OFF-SITE TILL WELLS
FOURTH QUARTER 1999**

Field Parameters and Data	T-5	T-6	T-7	T-8	T-9	T-10
Date	11/9/99	11/9/09	11/9/99	11/10/99	11/10/99	11/10/99
Weather Conditions	Sunny 77 F	Sunny 77 F	Sunny 77 F	Overcast 72 F	Overcast 72 F	Overcast 72 F
<i>Before Purging</i>						
PID Reading (ppm) 11/9/99	0	61	0	0	7	0
pH	6.93	6.46	11.96	7.49	6.96	7
Dissolved Oxygen (ppm)	5.07	1.14	9.4	2.55	2.65	1.65
Temperature (C)	15.4	15.9	15.7	15.4	16.4	17.3
Specific Conductivity (uS/cm)	0.691	3.77	3.84	0.476	1.14	1.19
Total Depth of Well (Ft from top of inner casing to water)	18.59	19.14	17.47	15.82	25.15	17.85
Depth to water (Ft from top of inner casing to water)	10.54	13.98	12.99	10.45	3.71	9.16
Estimated water volume in well (gallons)	1.31	0.75	0.73	0.88	3.49	1.47
Three Well Volumes (gallons)	3.94	2.25	2.19	2.63	10.48	4.41
<i>After Purging</i>						
Purge Start	930	1040	1148	750	1045	1336
Purge End	1045	1130	1240	810	1130	1405
Purge Method	BT	BT	BT	BT	BT	BT
Approximate Purge Rate (gpm)	0.03	0.06	0.06	0.10	0.24	0.16
Total Volume Purged (gal.)	2.5**	3**	3.2	2**	11	4.5
pH	7.07	6.48	9.37	7.13	6.63	6.97
Dissolved Oxygen (ppm)	4.21	1.48	1.55	2.9	1.87	2.6
Temperature (C)	16.4	15.2	15.1	15.3	16	16.3
Specific Conductivity (uS/cm)	0.672	3.84	0.679	0.522	0.943	1.21
<i>Sampling</i>						
Sampling Date(s)	11/9-15/99	11/9/99	11/9/99	11/10/99	11/10/99	11/10/99
Sampling End Time	1200	1130	1240	1515	1130	1350
Sampling Method	BT	BT	BT	BT	BT	BT
Notes:						
** = Well purged dry	NM = no measurement	***PID displayed over range = above 2,000 ppm(max displayed)				
BT = Bailer (Teflon)	PP = Peristaltic Pump	PID = Photoionization Detector				

TABLE A-3
FIELD MEASUREMENTS AND PURGE DATA
ECC OFF-SITE SAND / GRAVEL WELLS
FOURTH QUARTER 1999

Field Parameters and Data	S-1	S-2	S-3	S-4A	MW-13
Date	11/11/99	11/10/99	11/11/99	11/11/99	11/10/99
Weather Conditions	Overcast 65 F	Overcast 72 F	Overcast 65 F	Overcast 65 F	Overcast 72 F
<i>Before Purging</i>					
PID Reading (ppm) 11/9/99	0	7	0	0	0
pH	7.36	6.78	9.11	7.5	6.68
Dissolved Oxygen (ppm)	1.86	0.45	0.42	1.35	0.8
Temperature (C)	12.8	15.2	14.4	13.6	15.1
Specific Conductivity (uS/cm)	0.589	0.853	0.607	0.612	1.07
Total Depth of Well (Feet below ground surface)	40.87	21.88	35.33	45.89	16.89
Depth to water (Ft from top of inner casing to water)	12.02	10.44	5.06	11.98	11.47
Estimated water volume in well (gallons)	4.70	1.86	4.93	5.58	0.88
Three Well Volumes(gallons)	14.11	5.59	14.8	16.73	2.65
<i>After Purging</i>					
Purge Start	1025	0810	1200	1530	0910
Purge End	1145	0845	1330	1645	0945
Purge Method	PP	PP	PP	PP	PP
Approximate Purge Rate (gpm)	0.18	0.17	0.5	0.23	0.086
Total Volume Purged (gal.)	14.5	6	15	17	3
pH	7.08	6.85	7.02	7.25	6.43
Dissolved Oxygen (ppm)	0.8	0.95	0.78	0.57	0.5
Temperature (C)	13.1	15.2	14.3	13.6	15.1
Specific Conductivity (uS/cm)	0.593	0.795	0.913	0.591	1.08
<i>Sampling</i>					
Sampling Date(s)	11/11/99	11/10/99	11/11/99	11/11/99	11/10/99
Sampling End Time	1145	0845	1330	1645	0945
Sampling Method	PP	PP	PP	PP	PP
Notes: NM = no measurement ***PID displayed over range = above 2,000 ppm(max displayed) BT = Bailer (Teflon) PP = Peristaltic Pump PID = Photoionization Detector					